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# ESTABLISHMENT OF THE ACADEMY OF SCIENCES IN RUSSIA

B. V. Levshin

Translation of "Sozdaniye Akademii Nauk v Rossii," Priroda, Academy of Sciences of the USSR, No. 1, January 1974, pp. 6-24.




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# ESTABLISHMENT OF THE ACADEMY OF SCIENCES IN RUSSIA

B. V. Levshin

The Academy of Sciences, USSR, the 250th anniversary of the /6* founding of which falls on February 8, 1974, is the oldest scientific institution in the country. The foundation of the Academy became possible as a result of outstanding achievements of Russia in the areas of education and progress in the early 18th century. The struggle to overcome the cultural backwardness was at that time one of the primary tasks of the Russian government, which required internal transformations and reinforcement of foreign policy.

## The Rise of Science and Culture

In the second half of the 17th century, a rise was noted in Russia in the cultural level. This was caused by general improvement of the economic position of the country and successes in foreign policy, providing the country with a comparatively long period of peaceful development. In order to satisfy the needs of the developing economy for specialists, government and private schools were created, providing instruction primarily in Latin and Greek, rhetoric, grammar and philosophy. One such school was the school of F. M. Rtishchev, which taught languages (Slavic and Greek), rhetoric and philosophy. Later, this educational institution served as the basis for the founding of the Slavic-Greek-Latin Academy of Moscow in 1687, with a well-planned program not only in languages, but also in logic, psychology and the natural sciences.

The centers of study of individual branches of science were certain government institutions. For example, work on chemistry was performed at the Pharmaceutical Department, which had a staff

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* Numbers in the margin indicate pagination in the foreign text.

of specialists and translators and a good specialized library. Tremendous work on the geographical study of the territory of the country was performed by the Siberian /Department./ In the middle of the 17th century, the Lena, Yana, Indirgirka, Kolima and Amur Rivers were studied, as well as the shores of the Sea of Okhotsk; it was established that Asia and America were separated by a strait. In 1686, the outstanding cartographer Semen Remezov created a map of Siberia. These studies served as the basis for the work of Western European geographers, who composed maps of the northern part of Asia.

One indication of the growth of culture was the success achieved in the area of social sciences. A significant step forward was made in the development of historical knowledge. At this time, a number of works and popular historical texts appeared, written in readable and engaging form, telling their readers of the history of Russia; among these texts, the "Synopsis" of Innokentiy Gizel' was quite popular.

The publication of the work of M. G. Smotritskiy on Slavonic grammar in 1648, systematically and completely discussing questions of orthography, morphology, syntax, stylistics and sentence formation, was an outstanding achievement in philological science. Other facts could be noted, indicating the cultural and scientific achievements of the Russian government at this time, laying a firm foundation for further devlopment of culture and science in the 18th century.

The emergence of Russia under Peter I as a leading world power required the establishment of a powerful economy, restructuring of government administration and reorganization of the army. These problems could be solved only on a strong scientific basis. Without such a basis, it would be impossible to utilize the rich natural resources of the country for the development of industry, or to undertake the extensive military and administrative transformations required. However, the development of science was attempt-

ed without a broad base of education; the shortage of trained personnel was acutely felt. Therefore, significant efforts were applied to the development of education.

These purposes were served by the professional schools opened in Moscow and St.Petersburg such as the Moscow School of Mathematical and Navigational Sciences (transferred to the Marine Academy in St.Petersburg in 1715), the artillery and engineering school and the medical schools of the hospitals of Moscow and St. Petersburg.

In order to provide textbooks for the these schools, domestic texts were written, such as "Arithmetic" by L. F. Magnitskiy, "Static Science or Mechanics" by G. G. Skornyakov-Pisarev, and books by foreign authors were translated. The network of printers' establishments was expanded in order to print these books. The Sinodal'naya Press of Moscow was split to form a new publishing house in St.Petersburg in 1711; shortly thereafter, three more publishing houses were founded in St.Petersburg. The development of printing and the expansion of printed publications required that the official alphabet be simplified, which was done in 1708. /7

The spread of books in the country led to the creation of libraries. The first large library was the library of the czar in the Summer Palace in St.Petersburg, with a wide selection of books. On Peter's initiative, the first national museum, the Kunstkamer, was created.

Geographic and geological expeditions were organized to study the natural riches of the country and their utilization. The Siberian, Urals and Olonets ore deposits, the coal reserves in Siberia and on the Don were studied. Geodetic surveys were taken on Azov, Black and Baltic Seas and on the Don. In 1719-1721, surveys were made of the western and southern shores of the Caspian Sea. The geodesists I. M. Yevreniov and F. F. Luzhin mapped a part of the Kuril Islands.

However, successful development of domestic science required strengthening of scientific ties with Western Europe. It is to Peter's credit that he understood the importance of using the achievements of world science for the development of his country, and took all steps necessary to carry Russia along in the general process of cultural development of Europe. V. I. Lenin believed that the Europeanization of Russia "began with Alexander II, if not with Peter the Great ..."[1]. Considering the abrupt, sometimes painful breaking of old habits and traditions in this time of great change, V. I. Lenin wrote, "... Peter accelerated the adoption of western ways by barbarian Russia, not hesitating to use barbarian means to combat barbarism."[2]

The Academy in Europe

By this time in the West, due to the deep economic changes and progress of industry, science had begun to develop rapidly. The discoveries of Copernicus and Galileo in the area of celestial mechanics, the creation of the science of multiple planets and the heliocentric system sharply reduced the influence of the church on science and helped to bring scientific research based on objective study of the world to a leading position. The moral basis of this approach to scientific work was provided by philosophy, which began the struggle against religious mysticism under the flag of the limitless dominion of human intelligence. The rationalistic weltanschauung was based on the achievements of experimental studies, performed by such outstanding scientists as Toricelli in Italy, Harvey, Gilbert, Boyle and Hooke in England, Levenhook and Huygens in Holland, Descartes and Pascal in France. Such titans as Newton and Leibnitz had tremendous influence on the development of physics, astronomy and mathematics. /8

[1] V. I. Lenin, Complete Collected Works, Vol. 22, p. 371.
[2] Ibid., Vol. 36, p. 301.

The development and statement of new studies required the creation of new organizational forms, since it was impossible to perform such studies within the walls of the medieval universities, filled with representatives of the religious scholastic school of thought.

The first form of organization of scientists consisted of private societies. The process of their formation gradually led to the formation of unions supported by governments. Following the name of the Platonic school in Greece, these unions came to be called academies. In the 15th and 16th centuries, academies appeared in Italy (in 1433 at Palermo, in 1474 at Florence, etc.), in the 17th century -- the French Academy for the Study of Linguistics, the Academy of Inscriptions and Medals and the Paris Academy of Sciences. In 1661, the London Royal Society was founded in England; in 1700, the Prussian Academy of Sciences was formed in Berlin. The academies included observatories, botanical gardens, laboratories, libraries and museums. During the 17th century, the word "academy" was very common in Europe, and not only scientific societies, but also educational institutions were called academies at that time. Peter had the opportunity to familiarize himself with some of these institutions personally during his travels abroad.

On 27 January 1698, Peter visited the London Royal Society, famous for its museum. On 9 March, he was received by the director of the famous Greenwich Observatory, J. Flemstead, and on 8 April he visited Oxford, where he was met by the heads of the university, who gave the czar several books on mathematics. There /9 is reason to assume that during his visit to the mint, Peter met Newton, who was an inspector of the mint and whose duties would have included that of familiarizing the Russian czar with the organization and activity of the institution.

The czar's visits to European museums are well known. Peter frequently visited the Dutch anatomist F. Ruisch, known for

his skill at dissection, and heard his lectures. Together with the famous physician G. Burgave, Peter visited the Leiden Botanical Garden. We know that in the Dutch city of Delft, Peter, fleeing from a crowd of curious citizens, rode a yacht to the middle of the river and there spent two hours with Levenhook examining tiny objects under the microscope invented by the Dutch scientist[3].

Peter corresponded and repeatedly met with Leibnitz: in 1711 in Torgau, in 1712 in Karlsbad, Teplitse and Dresden, in 1716 in Piermont. Peter also corresponded with H. Wolf, a professor of mathematics and natural sciences of Hall and Marburg Universities. In France, Peter visited the Mazarin and Sorbonne Colleges, where he met the astronomer J. Cassini and the mathematician P. Varignon. Peter discussed geography and astronomy with the famous French geographer G. Delisle.

During his visit to Paris in 1717, Peter visited the Academy of Sciences, where on 18 June he attended an extraordinary meeting. An exhibition of inventions was set up just for the czar, and chemical experiments were demonstrated. After this, the Paris Academy of Sciences suggested that Peter be elected an honorary member. The czar transmitted his answer to the Academy through physician R. Areskin: "... His Majesty finds it quite pleasant that your remarkable company has seen fit to include him /10
among its members, who have done such noble work since 1699, work which by right belongs to every academician. When the opportunity presents itself, he looks forward to being able to demonstrate this nobility himself.

"His Majesty also agrees with your opinion that distinction in science consists not so much in high rank as in genius, talent and industriousness; by carefully investigating all possible rarities and discoveries within his realm and reporting them to the

[3] S. L. Sobolev, History of the Microscope and Microscopic Studies in Russia in the 18th Century, Moscow-Leningrad, 1949, p. 36.

Academy, His Majesty|hopes to be worthy of being called a true member of your remarkable group."[4]

After this letter was received, Peter was selected (22 December 1717) as an honorary member of the Academy unanimously. In his letter expressing his gratitude, Peter wrote: "We desire nothing more than to place science in a better light through the diligence which we will apply."[5]

"To Make an Academy" in Russia

A developing relationship with the Academy of Sciences in Paris, the exchange of the results of scientific investigations, apparently suggested to Peter the thought of creating an Academy of Sciences in Russia as early as 1720. Even earlier statements of Peter concerning his desire to found an academy in Russia are known, but at that time he apparently had in mind an educational institution. For example, in a discussion with Patriarch|Adrian on his return from a voyage abroad|in 1697-1698, Peter put forth the idea of an academy in connection with the need to further education in Russia. However, due to the great military expenses of the time, this problem was left unsolved for the moment. Later, the czar returned to the thought of building an academy repeatedly on various occasions.

The program of cultural and educational measures set forth before Peter by Leibnitz included the organization of schools and /11
academies of sciences, arts and crafts, where the future scientists were to study. Also, the reform programs suggested by Leibnitz turned significant attention to the creation of museums, botanical and zoological gardens, the activity of which was to be directed to educational purposes as well.

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[4] Russian Overseas Collection, Part 3, Book 3, Berlin-Paris-London 1859, p. 8.

[5] Ibid.

The suggestions for improvement of education set forth by the Russian advisers of the czar also included academies. For example, the records of Fedor Saltykov included the suggestion of founding academies at monasteries; in each of the eight districts, two academies of 2000 students each. On another plan, submitted in 1718, the czar wrote: "Make an academy."[6]

The idea of the organization of an academy as a scientific institution and educational institution was set forth by Peter in a letter to H. Wolf, in response to his letter of 11 January 1721, in the name of the czar's Physician in Ordinary L. L. Blyumentrost, who occupied this post after the death of R. Areskin. Wolf wrote: "His Imperial Majesty has in mind to found an Academy of Sciences and another associated institution where knowledgeable people could study the necessary sciences, and also to endow the arts and crafts, concerning which he wrote me several weeks ago."[7]

There was some doubt concerning the need to organize a new scientific institution in the country. In particular, the well-known state activist and scientist V. N. Tatishchev, to whom Blyumentrost turned with a request to seek out scientists for the Academy of Sciences in Sweden, he expressed the opinion that it was still early for the creation of such an institution in a country where there were as yet no lower schools: "... it is too early to look for seeds when the ground is not prepared to sow them." At this point Peter, who was listening to the conversation answered Tatishchev as follows: "A landowner wanted to build a mill on his land, but had no water. Seeing that his neighbors had lakes and swamps with plenty of water, he immediately began, /12 with their agreement, to dig a canal and make ready his mill, even though he still could not use it, but his children, desiring to follow the will of their father, completed the work." Peter thus

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[6] Materials for the History of the Academy of Sciences, Vol. 1, SPB Press, 1885, p. 5.

[7] P. P. Pekarskiy, The History of the Academy of Sciences in Peterburg, Vol. 1, SPB Press, 1870, pp. XXVIII-XXIX.

assumed that one must be concerned simultaneously with education and the creation of a scientific institution and that the work expended in this direction would yield results in the future. "An academy," Peter said, "should bring confidence and honor to us in Europe, proving that we are truly working for science and that the time has come to stop thinking of us as barbarians who ignore science."[8]

The attempts to develop scientific relations with other European countries on an equal basis stimulated Peter to begin organizing the Academy of Sciences in St.Petersburg "like those in Paris, London, Berlin and other places." By this time, the soil was ready for the founding of such an institution in Russia. And in February of 1721, I. D. Schumacher was sent abroad with instructions to familiarize himself in detail with the work of the European academies and study the possibility of selecting scientific workers for the future Russian Academy of Sciences.

The Academy of Sciences was closely related with this man for over 30 years. A man of Alsace, Yohann Daniel Schumacher, who received the degree of Master of Philosophy at the University of Strasbourg, was invited to St.Petersburg in 1714 and named secretary of the medical office for the conduct of foreign correspondence. A very quick man, with intelligence and administrative capabilities, a man of great energy and with a great desire to make his career in Russia, Schumacher soon gained the confidence of Areskin, the czar's Physician in Ordinary, and was given the assignment to bring order to the rapidly growing library of the czar, and then to the art collection as well. Schumacher continued the work in the library and on the art collection and after Areskin's death, when the library and art collection came under the control of the /13
new Physician in Ordinary Blyumentrost, Schumacher continued his duties. Thus, Schumacher came to be one of those persons serving

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[8] P. P. Pekarskiy, The History of the Academy of Sciences in Peterburg, Vol. 1, SPB Press, 1870, p. XIII.

in the palace. He solidified this position by marrying the daughter of the czar's chef, Felten.

As he prepared to travel abroad, Schumacher was given a detailed program for his scientific field trip, during which he was to visit Germany, France, Holland and England. In Paris, Schumacher was to transmit a letter from the czar to the Academy of Sciences and a map of the Caspian Sea composed by K. P. Verden and F. I. Soymonov, which was of great scientific value. In order to fulfill his mission, he initially met with the president of the Paris Academy of Sciences, Abbot Bignon, and presented him with his letter of recommendation from Blyumentrost, then, at a meeting of the Academy, presented its secretary B. Fontenèl with the map of the Caspian Sea and Peter's letter of 18 February 1721, in which the czar wrote:

"It is extremely pleasant to us that you have selected us as a member of your company. We must continue by giving you our thanks for this election and assuring you that we will accept the position which you offer and that we wish nothing more than to put science in a better light by means of the position you have given us in making us a member of your company. We have instructed our first Physician in Ordinary Blyumentrost to report to you from time to time as to what has occured in our realm. It will be truly pleasant if you will correspond with him and report to him from time to time what new discoveries the members of your academy have made. Until today, there has never been an accurate map of the Caspian Sea: two years of work have gone into the production of the accurate map which we have had made, and which we now send to the Academy, in the hope that it will be pleasant to you /14
as something new and accurate. We also note that our first Physician in ordinary will report to the Academy by means of a letter and our librarian will report to the Academy in person."[9] "Then,"

[9] Archives of Academy of Sciences USSR, Folio 3, Opus 1, Part 1, Sheets 13-13 rev.

Schumacher writes, "we read the letter from the Physician in Ordinary to the Academy, in which he reported what had been corrected in the map and how the Russian Academy of Sciences was to be set up and what had already been done in this respect."[10]

In October of 1721, Fontenel replied to Peter in the name of the Paris Academy:

"Sire!

The Royal Academy of Sciences was greatly honored that Y.I.M. have written to it, and wishes me to transmit its gratitude. The Academy does not honor Your Majesty, but rather is honored by the greatest and strongest monarch on earth, who has seen fit to utilize his great power for the advancement of science in his extensive land, for the first time. If France could not better honor the name of one of its kings than by adding to his titles that of the resurrector of science, how great must be the honor of a monarch who is the founder of science in his land? The Academy has placed the map of the Caspian Sea provided by Y.M. in its archives; and although it is the first accurate and detailed map of this area, the symbols and names on the map do maintain a correspondence which Y.I.M. have retained. The hall where the machines are kept was immediately opened when your emissary stated that he would like to have a few pictures of them. The Academy re- /15
quests that you accept the last six books of its "History," which I transmit herewith, honored that your august name is included in our company. With deep respect,

Sire!

I remain your obedient servant Fontenel."[11]

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[10] P. P. Pekarskiy, Science and Literature in Russia under Peter the Great, Vol. 1, SPB Press, 1862, p. 535. However, the text of the letter of L. L. Blyumentrost does not mention the founding of the Academy of Sciences. The "steps in this direction" mentioned must refer to the Siberian expedition of 1719, which was mentioned in the letter. Apparently, the mention of the Academy must be attributed to the imagination of Schumacher.

Schumacher eagerly visited other scientific institutions in France, Germany, Holland and England as well. In his meetings with the scientists, Schumacher told them of Peter's dream of founding an Academy of Sciences in Russia, and invited the scientists to come and work there. In Germany, he held discussions on this subject with H. Wolf, in Paris he concluded an agreement on work for Russia with the famous astronomer J. Delisle, the brother of the famous cartographer. On 2 March 1722, Schumacher was told that funds had been set aside for the travel expenses of scientists desiring to come and work in Russia, and also for the purchase of the necessary instruments. In 1723, Blyumentrost, performing the assignment given him, suggested that an astonomer, a geographer, an anatomist, a botanist and a chemist be invited for the Russian Academy of Sciences. It was later decided to invite an additional four or five scientists. It was agreed that only first-class specialists would be invited.

It was not easy to solve this problem, considering the distance and difficulty of travel into a country as little known in the West as Russia. However, the solution to the problem was facilitated by the rather poor material status of scientists in Western Europe and the popularity of travel by scientists from country to country at that time. Foreigners were quite important to almost every academy. For example, the president of the Royal Society in England was the German K. Oldenburg, Italian astronomers from the family of Cassini worked in the Paris Academy of Sciences, while in the Prussian Academy under Friedrich II there were considerably more Frenchmen than Germans.

Returning to Peterburg, Schumacher was able to report to /16
Peter on the results of his trip only in early 1723, after the czar returned from a trip to Persia. After hearing the report of

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[11] Archives of Academy of Sciences USSR, Folio 3, Opus, 1, Section 1, Sheet 14.

Blyumentrost on his negotiations with the scientists invited to work in the Academy of Sciences, Peter gave him the authorization to prepare a plan for the staff of the new institution. Beginning in the summer of 1723, construction of a new library and art museum building was begun, which was to serve as the basis for the operations of the Academy of Sciences.

The First Statute Concerning the Academy of Sciences.

By the beginning of 1724, the business of organization of the Acadmey of Sciences had advanced so far that a legal formulation of the new institution was required. This problem was solved during January of 1724. On 13 January, Peter I signed the "definition of the Academy," "in which languages are to be studied, as well as other sciences and arts and books are to be translated, to assign a position and income for it."[12] This document was apparently an order that the Senate study the question of organization of the Academy of Sciences at its next session, determining the range of its activity and means of financial support. This last question occupied the attention of the czar during subsequent days as well, and on 21 January Peter wrote and transmitted to the Senate a paper "On the Determination of Postal Funds for the Academy."[13]

As soon as the source of financial support was found, the question of the Academy of Sciences was presented to the Senate for consideration the next day. The founding of the new scientific institution was discussed on 22 January at the session of the Senate held in St. Petersburg in the Winter Palace, which lasted from 8 A. M. until 12 noon. Leading lights of the government attended the session: Admiral F. M. Apraksin, Chancellor G. I. Golovkin, Prince A. D. Menshikov, Procurator General of the Senate P. I. Yaguzhinskiy and others. The regulation for the Academy of Sci- /17

[12] Full Collection of Laws, Vol. 7, SPB Press, 1830, No. 4427.
[13] Central State Archives of Ancient Documents, Office of Peter the Great, 1, No. 53, Sheet 571.

ences prepared by Blyumentrost, with personal comments by Peter I, was discussed at this session.

Although the details of the discussion held are unknown, we can judge from the comments of Peter that the czar was quite concerned with the matter of translating foreign scientific books, which was also to be the job of the Academy of Sciences. Peter wrote: "... this is how it should be done: he who is familiar with sciences, but not with the arts, should be taught the arts, while those who are familiar with the arts, but know no languages, should be sent to study languages. Those Russians or foreigners who were born here or moved here while quite young, so that they know our language as their native tongue, will find it easier to translate into our language than from it into a foreign language." Later in his paper, Peter explained what he meant by arts: "The arts as follows: mathematics, including spherical triangles, mechanics, anatomy, surgery, botany, military architecture, civil architecture, hydraulics and the like."[14]

On 28 January 1724, a Senate order was published on the establishment of the Academy of Sciences, announcing that "His Majesty Peter the Great ... has ordered the establishment of an academy in which languages are to be studied, along with other sciences and arts, and books are to be translated."[15] Funds in the amount of 24,912 rubles were allocated for the support of the Academy, but not from postal income, as was initially suggested, but rather funds collected from the cities of Narva, Derpet, Pernov and Arensburga. Thus, two questions of principle were immediately answered -- the creation of the new scientific institution and the provision of funds for its support. We must note that at the time in France even ordinary academicians received no income, while the Prussian Academy was forced to support itself

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[14] Collection of the Russian Historical Society, Vol. 9, SPB Press, 1873, p. 534.

[15] Full Collection of Laws, Vol. 7, SPB Press, 1830, No. 4443.

by the publication of calendars and by organizing lotteries. In our Academy of Sciences, monitary support was provided not only for the scientists, but also funds were set aside for scientific investigations. This immediately placed the Academy in the position of a government organization, supported by funds for the conduct of scientific work. It should be recalled that, according to the initial plan presented by Blyumentrost, 20,000 rubles were to be set aside for the support of the Academy (at that time, when the entire state income was not over 8 million rubles, this was quite a significant sum!). But Peter, in spite of his natural conservativism in the matter of expenditure of state funds, increased this sum by almost one fourth, and stated that this was "only for the beginning of the Academy,"[16] and would subsequently be increased.

Peter died before he could sign the declaration on the Academy, while the order of the Senate did not include the declaration. Therefore, until 1747 the Academy of Sciences performed its activities using only the plan for the declaration composed by Blyumentrost. Blyumentrost, named president of the Academy, did not have the text of this plan which he had presented to Peter until 18 October 1724, when a notice was published in the "Journal of the Academy" to the effect that "the Senate has provided the approved plan for the Academy of Sciences requested from His Imperial Majesty." Later, this document, with the resolutions of Peter, was referred to as a declaration approved by the czar, and was sometimes referred to as a "general regulation."

According to the order of Peter, the Academy was a scientific research institution, which included a university and secondary school. The Academy itself was divided into three classes:

"In the first class -- all mathematical sciences and subordinate sciences.

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[16] Central State Historical Archives, USSR, Named Orders, 1724, Folio 1329, Opus 1, Part 16, Sheets 89-100.

In the second class -- all parts of physics.

In the third class -- literature, history, the laws of nature and of man."[17]

The mathematics class included four departments: theoretical mathematics, astronomy, geography and navigation, and two departments of mechanics, the practical applications of which Peter considered highly important. The physics class also included four departments: theoretical and experimental physics, anatomy, chemistry and botany. The humanitarian class consisted of three departments: oratory and antiquities, ancient and modern history, as well as law, politics and ethics. The number of academicians was defined as 11 persons.

The chief task of the Academy was the development of science, and the corresponding paragraph of the order states: "Their duties: everything which has been studied in science -- testify as to what should be corrected and what should be popularized -- report what each has invented and transmit to the secretary. Concerning all discoveries announced and submitted for testing, determine whether they are true, are of great or little use and whether they were already known or not."[18]

The order also set forth the organizational forms of the work of the Academy: "Meet weekly, state opinions, use the advice and opinions of the others and particularly repeat scientific experiments in the presence of all members. Expenditures required for experiments are to be paid from the funds of the Academy. Public meetings are to be held thrice each year."[19]

Great attention was given to abstracting of the scientific literature: "Each member should make extracts of all books provided by the state and give them to the Academy. The same should

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[17] Archives of the Academy of Sciences, Folio 3, Opus 1, Part 1, Sheets 36-39 or 40.

[18] Materials for the History of the Imperial Academy of Sciences. SPB Press, 1885, Vol. 1, pp. 23-24.

[19] Ibid., p. 24.

be done for all worthy books which the Academy purchases from its income."[20]

The members of the Academy were to evaluate the works presented scientifically, keeping scientific journals and preparing scientific training courses (and translating them from Latin into Russian) for students, actively participate in weekly scientific sessions and, at the three obligatory annual meetings of the Academy (assemblies), and also work on the popularization of science: "It is intended that not only should the arts and sciences be extended, but also that the people should gain benefit from them: this requires that every academician write the system of his science in Latin and teach his science publicly one hour each day."[21] However, this was to be done in such a way that the public lectures did not hinder "other sciences and thoughts."

Quite remarkable is paragraph 15, calling for the training /20
of Russian cadres: "Furthermore, H.I.M. calls for one meeting to be so organized that vacant positions of academicians might be filled with people of our country. For this purpose, each academician will be assigned a student who already has some background in the sciences that he might apprentice himself to the academician and learn his science perfectly. They will not only, hopefully, follow in the path of the academician under whom they studied, but will also be provided a sufficient stipend at the present time."[22]

The declaration does not indicate clearly whether the art chamber and library are to be included in the Academy; it is stated only that these institutions are to be available for the use of the academicians, and that their heads are to follow the instructions of the academicians.

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[20] Materials for the History of the Imperial Academy of Sciences. SPB Press, 1885, Vol. 1, p. 24.

[21] Archives of the Academy of Sciences USSR, Folio 3, Opus 1, Part 1, Sheet 138 rev.

[22] Ibid.

The czar was to be the supreme leader of the Academy. It was to have the right to elect a president, either for life or to be changed each year (or half year). The Academy "was allowed" to award academic degrees in order to "be able to give degrees of academicians to those who had advanced science." Scientific correspondence was to be maintained by the secretary of the Academy. A director, two deputies and one financial officer were established in order to control the material and economic affairs of the Academy.

The Make-up of the Academy

In February of 1724, a "brief extract" of the declaration was composed, consisting of 19 sections and translated into German and French; this extract was sent to Russian diplomatic missions abroad for publication and selection of candidates for the Academy of Sciences.

After publication of this "extract" abroad, and also as a result of the continued activity of Blyumentrost on the recruitment of the staff for the Academy, animated correspondence was held with foreign scientists. This correspondence became extensive and involved primarily Germany and France. The Russian diplomatic missions, headed in Prussia by A. G. Golovkin and in France by B. I. Kurakin, were obligated by an order of 17 September 1724 to take an active part in the selection of members for the Academy of Sciences. They entered actively the search for scientists and held discussions with many concerning the conditions of work in Russia. The correspondence in the archives of the Academy of Sciences USSR concerning the visits of foreigners to Russia gives us valuable information on their interest in the Academy of Sciences opened in Peterburg, their rights, their obligations and the rewards offered.

As we can see from this correspondence, the scientists were quite concerned about the climate of Peterburg. H. Wolf wrote di-

rectly that "the climate would kill him," and therefore "he requested in his discussions that 20,000 rubles be paid in advance."[23]

Some scientists made demands in return for their moving to Russia which were too great. For example, J. Delisle required that his cousin L. Delisle de la Croier and his mechanic Vignon be invited along with him. H. Wolf, who was sought for the post of president of the Academy of Sciences, requested an immoderate sum of money, as the above letter indicates, which the Academy of Sciences could not provide. Therefore, he could not be invited, in spite of the extensive negotiations conducted. Still, Wolf performed a great and useful service in the selection of scientists to work at the Russian Academy of Sciences. Thanks to him, discussions could be conducted concerning contracts with the mathematicians J. German, Daniel and Nicholas Bernoulli, the physicists H. Martini and G. Bilfinger, who performed very useful work for our Academy. Another German scientist, I. Menke, helped to bring the historian and philologist I. Cole to the Academy, who in turn brought along his student G. F. Miller, who later became a famous historian and member of the Academy.

As an example of the conditions under which scientists were invited to work in Russia, we present the complete text of the agreement with J. German:

8 January 1725

Whereas His Russian Imperial Majesty, most gracious father of the people, for the good of his land has established in his imperial capital city of Peterburg an academy of the free sciences and knowledge, and for this purpose has given his confidential advisor and Minister Plenipotentiary in the Royal Prussian Court, Count Alexander Golovkin, an instruction to reach agreement with scientists desiring to /21

[23] Archives of the Academy of Sciences USSR, Folio 3, Opus 1, Part 582, Sheet 52 rev.

work at the Academy, therefore the following agreement is hereby officially formulated between Count Golovkin and Mr Professor German:

Professor German agrees to enter the Imperial Academy of Sciences as a member of the Department of Higher Mathematics for a period of 5 years, and agrees for that time to bend his efforts toward the improvement of the Academy, particularly the Department of Higher Mathematics, working in this direction each day, excluding holidays, reading lectures to the youth at the Academy one hour each day, and apprenticing one or two students to his science. In response, Count Golovkin, in the name of H.I.M. promises to pay Professor German 1500 rubles in each of the first two years, 2000 in each of the last three years covered by this agreement, and to provide a free apartment, yard and lights, the sums to be paid quarterly or three times each year, beginning with the first payment upon arrival at St. Peterburg. Furthermore, 300 rubles travel expense will be provided. Furthermore, H.I.M. promises not to dismiss him for sickness or age, but rather to continue paying the full sum agreed. If he should decide not to continue his work at the Academy after the first five years, he must so inform the Academy in writing one year in advance, in which case the agreed sum will still be paid. We hereby sign two copies of this agreement, which is to be published. Signed in Frankfurt-am-Oder, January 8, 1725.

Jacob German, Professor of Mathematics and Philosophy Public and Ordinary."[24]

The difficulties encountered in selecting workers for the Academy of Sciences resulted primarily from the fact that the instructions were that only truly great scientists be invited to

[24] Archives of the Academy of Sciences USSR, Folio 3, Opus 1, Part 700, Sheets 9-10.

the Academy. The positive solution of this problem was facilitated by the great material rewards allocated by Russia for the scientists. The academicians were given 1-2 thousand rubles per year (depending on the scientific value of the specialist), plus travel pay, and in St.Petersburg they were provided with good apartments, including heat and light. The students who traveled together with the scientists were given 250 rubles per year, and the translators who worked at the Academy of Sciences were paid 200 rubles per year.

Since foreigners arriving in Russia, naturally, could not immediately arrange their lives, it was very important to help them during the first weeks of their life in the strange country. After the death of Peter I, Blyumentrost wrote the following "report" to the senate:

"Her Majesty has ordered that the academicians residence be provided with domestic necessities for three weeks or a month, without pay; then the charge should be made at the current price, to be paid by the Academy. The scientists should be given some money, to be returned to the Academy from the wages of the scientists, so as to avoid useless loss of time in travel to taverns and other places to eat. For this is a habit of many foreigners, to lose time nonproductively in luxury and drinking, which would cost the state more than the benefits herein described."[25]

Judging from this document, Blyumentrost had learned his lesson well from the thrifty czar and was concerned that state funds not be lost, and that the scientists "not lose time in inactivity."

In this same document, the future president of the Academy of Sciences expresses concern about the publication of works: "We cannot get along without a publishing house, and I therefore

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[25] Archives of the Academy of Sciences USSR, Folio 3, Opus 1, Part 643, Sheets 146-146 rev.

request that the Senate order the founding of a publishing house of the Academy, and provide papers of various types for printing of books, tools and other requirements, as required for the publishing house of the Academy, since otherwise books would become so expensive that no foreigner could afford to purchase them."[26]

Opening of the Academy of Sciences

A large stone building on the right bank of the Neva on the Peterburg side, was taken from the well-known diplomat P. P. Shafirov, who had fallen in disgrace, as well as the reconstructed home of the czaritsa Praskov'ya Fedorovna (wife of czar Ivan V, the son of Aleksey Mikhaylovich from his first marriage and the nominal co-ruler of Peter I in 1682-1696), located to the left of the large library and museum building at the tip of Vasil'yevskiy Island, were set aside for the Academy. Before the construction of this building the Academy and the museum utilized the so-called Kikina Palace, which also originally contained the treasury of the Academy. The new building of the art museum was finished in 1727. Thus, the Academy of Sciences was given the necessary space from the very beginning for the library and the scientific collections of the museum, a response to the order "that the Academy have the required space." The Academy of Sciences was also given a staff, which as early as 1724 included the painter M. Gzell', art students and the artist I. Mattarnovi, the sculptor K. B. Rastrelli, translators M. P. Starov, I. S. Gorletskiy, S. M. Koroin and others. Schumacher, the head of the library and museum, also performed administrative functions and conducted correspondence.

The arriving scientists were the objects of great attention. In their honor, a reception was held on 15 August 1725 in the Summer Palace, which must have made quite an impression on the scientists.

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[26] Archives of the Academy of Sciences USSR, Folio 3, Opus 1, Part 643, Sheets 146-146 rev., 147.

The first meeting of the members of the Academy of Sciences was held in August 1725. Meetings were also held in September and October, and the reports read at these sessions were published in the first volume of "Commentaries" ("Writings") of the Academy of Sciences. The first report in Latin conserved in the archives of the Academy of Sciences USSR is dated 2(13) November 1725. At this session, Newton's study of the force of gravity was discussed. A report "On the Figure of the Earth" was read by J. German. G. Bilfinger spoke in opposition. In addition to the professors (academicians), students and certain others entitled by job or invited could attend, but only the professors had the right /23
to speak in the scientific meetings. Other participants in the meetings could read scientific reports.

The naming of a president of the Academy of Sciences was somewhat delayed. This post, as we have noted, was filled by H. Wolf, then by Prince D. K. Kantemir (the father of the later famous satirist), Baron G. Huissen -- a diplomat in the Russian service. He was a specialist in counterpropaganda, and, on order of the Russian government, spoke out in the press against books and articles published in Europe, criticizing the policies of Russia in one way or another. Only on 7 December 1725 did an order of the Senate signed by Catherine I name the royal physician in ordinary Lavrentiy Lavrent'yevich Blyumentrost as president of the Academy.

Blyumentrost was born in Moscow in 1692, and his father was also the Physician in Ordinary. L. L. Blyumentrost received a good education, first in Moscow, then in Hall and Leiden under Wolf, Hoffman and Burgave and in Amsterdam under Reich. As a doctor of medicine, he was a master of the natural and mathematical sciences, was familiar with the philosophy of Leibnitz, and knew the Russian, Latin, German and French languages well. Due to his deep scientific knowledge, his ability to hold forth capably, Blyumentrost was widely respected by the academicians. Unfortunately,

the transfer of the Royal Palace to Moscow following the death of Catherine I also required that he leave St.Petersburg, leaving many of the affairs of the Academy of Sciences to Schumacher, whose administration, due to his lack of understanding of the scientific needs of the Academy and the arbitrary tendencies of Schumacher, caused widespread dissatisfaction.

The first public meeting of the Academy of Sciences was held in the Shapirov home on 27 December 1725. An invitation was published in Russian and Latin, the first printed announcement of the beginning of the activity of the Academy of Sciences. In the name of the Academy of Sciences, the guests were welcomed by academician G. Bilfinger, who spoke on the founding of the Academy of Sciences and presented a scientific report on magnetism. He was opposed by J. German. Bilfinger and German stated that the establishment of the Academy of Sciences was the most important event in Russia at the time.

On 1 August 1726, the second session of the Academy of Sciences was held. By this time, the scientific staff had been significantly expanded. J. Delisle, a representative of the famous family of astronomers and geographers, had arrived from Paris, the historian G. Z. Bayer, the zoologist and anatomist I. G. Duvernois, the physiologist I. Weitbrecht, the physicist G. V. Kraft, the juridicist N. S. Beckenstein, the optician I. G. Leitman, the astronomer and geographer L. Delisle de la Croier and the chemist M. Burger had arrived. In 1727, the mathematician L. Euler also arrived. The Academy of Sciences was filled with scientists, many of whom later became the pride of world science. From the very first days of its founding, the Academy of Sciences also had honorary members. In 1724, this honor was given to H. Wolf, I. Bernoulli and many others.

The Peterburg Academy of Sciences, due to the serious scientific studies and remarkable discoveries dating from the very first years of its founding, is recognized as a first-class scien-

tific institution. The activity of the Academy was immediately applied to the service of the national interests and needs of the country. The task which the Academy undertook of providing a nucleus of workers for domestic science was successfully performed, and an abundance of outstanding activists were trained for Russian science and culture.